



**EMULEX**

*We network storage*

## **DOSLPCFG**

# **Emulex Offline Utility Program**

*User's Guide*

*Revision 1.80*

*April 17, 2006*



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## Revision Log

Revision	Date	Author	Description
1.00	June 16, 2005	Thi Nguyen	Initial controlled release
1.10	June 30, 2005	Thi Nguyen	Add new commands (help, version) and error codes
1.15	July 6, 2005	Thi Nguyen	Add new commands (read/setbootdevice)
1.20	July 7, 2005	Thi Nguyen	Add new command (deleteboot)
1.30	November 28, 2005	Thi Nguyen	Remove Deleteboot. Add Direct Download
1.35	January 19, 2006	Thi Nguyen	Change log file default directory
1.40	January 27, 2006	Thi Nguyen	Change listWWN display
1.50	February 23, 2006	Thi Nguyen	Add length to Config command
1.60	March 15, 2006	Thi Nguyen	Add scriptWWN, listIoBase. Add new error codes.
1.70	April 4, 2006	Thi Nguyen	Add example to clarify screendisplay command
1.80	April 17, 2006	Thi Nguyen	Clarify index used in enableboot command Allow WWN word 0 input in scriptWWN





## **1. General**

DOSLPCFG is a 16-bit application built with Microsoft Visual C++ 1.5 and runs on either DOS or FreeDOS.

The plan is to eventually release DOSLPCFG to users in a FreeDOS bootable CD.

DOSLPCFG is based on LP6DUTIL with some simplifications and additions:

- DOSLPCFG does not use the User Interface that provides a GUI look employed in LP6DUTIL (no Taskbar, Menu, Control Boxes...).
- DOSLPCFG has some features that LP6DUTIL does not possess such as Selecting Boot Device.
- DOSLPCFG suppresses most of the Debug features in LP6DUTIL that only Emulex Firmware/Hardware engineers need.

DOSLPCFG performs these operations:

- Obtain necessary information on Emulex HBAs
- Download all desired Firmware Image files
- Set various forms of configurations
- Run basic diagnostics tests

### **1.1. Supported HBAs**

All Emulex HBAs up to the Neptune family are supported.

### **1.2. Number of HBAs supported**

DOSLPCFG supports a maximum of 12 HBAs on one system.



## 2. Activation

Reboot your system under DOS or FreeDOS and log on the directory where DOSLPCFG.EXE resides. At the DOS/FreeDOS prompt, enter either one of the following two commands:

**DOSLPCFG <valid command>**

**DOSLPCFG @<script file name>**

*Example:*

- Use command line parameters to reset adapter #2 without running Post test:

**DOSLPCFG reset n=2 s=1**

Section 3 lists all supported commands and their uses.

- Use a script file named script1.txt in C:\test directory to execute a series of commands:

**DOSLPCFG @C:\test\script1.txt**

Section 4 describes the script file format.

### NOTES:

*DOSLPCFG is built to support up to 12 HBAs in a system, and needs about 530 KB of DOS/FreeDOS conventional memory. In case the memory available is not sufficient, DOSLPCFG is unable to run. To avoid this problem, user is asked to add the option **max=n** at the end of each command, where n is the maximum number of HBAs supported in place of the default 12. n should be less than 12, preferably 10. If n > 11, the new default value of 10 will be used.*

*Example:*

**DOSLPCFG listHBA max=8**





## 3. Supported Commands

All supported commands are listed in alphabetic order below:

### 3.1. config

#### 3.1.1. Syntax

There are two forms:

**3.1.1.1. config a=<adapter name> r=<region number> l=<byte length> c=<configuration filename>**

Valid region numbers are 1 to 32. The configuration region has to be initialized first.  
This command updates the specified configuration region of ALL adapters of the same selected name with contents of the selected configuration file.

**3.1.1.2. config n=<adapter number> r=<region number> l=<byte length> c=<configuration filename>**

Valid region numbers are 1 to 32. The configuration region has to be initialized first.  
This command updates the specified configuration region of only one adapter specified by its number with contents of the selected configuration file.

#### 3.1.2. Examples

```
config a=lp9000 r=6 l=68 c=ctplus1.cfl  
config a=lp8000 r=5 l=68 c=d:\dfplus1.cfl
```

```
config n=4 r=17 l=100 c=heplus1.cfl  
config n=2 r=6 l=68 c=d:\dfplus1.cfl
```

### 3.2. directdownload

Starting from the Emulex Thor family HBAs (LP10000), DOSLPCFG can directly access the Flash Device on the HBA without interfacing with the HBA firmware. This feature is useful in downloading the 2MB image file with extension .ROM to the HBA even though the firmware has been corrupted.

This command is not valid in Script file. It might need user's interface if the WWN reading got error.

#### 3.2.1. Syntax

**directdownload a=<adapter name/default> i=<firmware image filename>**

#### 3.2.2. Example

```
directdownload a=lp1050 i=C:\image\mfp191a3.rom  
directdownload a=default i=C:\image\tdu191a1.rom
```

*Notes:* The a=default option can be used only when there is only one single HBA or one dual channel HBA in the system. It is helpful in case the firmware is corrupted, and DOSLPCFG cannot detect the adapter type.



## 3.3. disableboot

### 3.3.1. Syntax

**disableboot n=<adapter number>**

This command disables the current Boot BIOS on the adapter specified by its number.

### 3.3.2. Example

disableboot n=6

## 3.4. download

### 3.4.1. Syntax

There are two forms:

#### 3.4.1.1. **download a=<adapter name> i=<firmware image filename>**

This command downloads the same selected firmware image file to ALL adapters of the same specified name.

#### 3.4.1.2. **download n=<adapter number> i=<firmware image filename>**

This command downloads the selected firmware image file to the only one adapter specified by its number.

### 3.4.2. Examples

```
download a=lp9802 i=c:\image\hd100a4.all
download a=lp850 i=d:\qf303a4.awc
download a=lp9000 i=cc301a0.prg
```

```
download n=1 i=ddb303a4.dwc
download n=6 i=lb162a1.prg
```

## 3.5. enableboot

### 3.5.1. Syntax

**enableboot n=<adapter number> i=<index>**

This command enables the desired Boot BIOS (selected by its index) on the adapter specified by its number. Index i is one of the indexes (base 1) shown in the *listboot* command display.

### 3.5.2. Example

enableboot n=6 i=1



## 3.6. extloopback

### 3.6.1. Syntax

**extloopback n=<all/adapter number> r=<repeat count> o=<option on error>**

This command runs the external loopback test. It requires the loopback plug in place to be successful. With one command, you can run the test on ONE or ALL (if you select n=all) adapters in your system. In the following examples, r is the repeat count, o is the test action option on error with o=1 for STOP, o=2 for REPEAT, o=3 for IGNORE.

### 3.6.2. Example

```
extloopback n=1 r=50 o=1
extloopback n=all r=20 o=3
```

## 3.7. Help (or ?)

### 3.7.1. Syntax

There are two forms:

- **help** or **?**

This command displays all the supported commands.

- **help <command>** or **? <command>**

This command displays the syntax of the selected command.

### 3.7.2. Example

```
help reset or ? reset
```

The display shows the syntax of the reset command:

```
reset <n=adapter/all> <s=skippost>
```

## 3.8. intloopback

### 3.8.1. Syntax

**intloopback n=<all/adapter number> r=<repeat count> o=<option on error>**



This command runs the internal loopback test. With one command, you can run the test on ONE or ALL (if you select n=all) adapters in your system. In the following examples, r is the repeat count, o is the test action option on error with o=1 for STOP, o=2 for REPEAT, o=3 for IGNORE.

The internal loopback test will fail on Emulex Blade adapters.

### 3.8.2. Example

```
intloopback n=1 r=100 o=1
intloopback n=all r=25 o=3
```

## 3.9. jumper

### 3.9.1. Syntax

**jumper n=<adapter number> s=<selection> r=<alternate region>**

This command allows user to select the default PCI Configuration or the alternate configurations.

selection: 0 for none; 1 for hardware default; 2 for soft jumper

alternate region: 6 or 7 (used only for selection 2, soft jumper)

### 3.9.2. Example

```
jumper n=5 s=2 r=7
jumper n=4 s=1
```

## 3.10. listboot

### 3.10.1. Syntax

**listboot n=<adapter number>**

This command lists all the Boot BIOS programs with indexes (base 1) and their code names currently loaded in the flash of the adapter specified by its number.

If the selected HBA does not have any Boot BIOS program loaded, error code 39 is returned.

### 3.10.2. Example

```
listboot n=3
```

The display looks like the one below:

```
boot 1 (enabled): RB1.60A7
boot 2 (disabled): RB1.52A1
```



## 3.11. listhba

### 3.11.1. Syntax

#### **listhba**

A list of all installed adapters in your system is displayed with adapter number (base 1), WWN, Functional FW, adapter type, and possible mailbox error.

If the system does not have any Emulex HBA installed, error code 45 is returned.

### 3.11.2. Example

```
listhba
```

The display looks like the one below:

```
adapter 1: C920A4B3 Functional FW: ES1.91A0 LP250048-900
adapter 2: WWN err. !!! ReadRev Error !!! LP8000
adapter 3: C920B4C2 Functional FW: QS3.81A3 LP850
adapter 4: C920A6D1 Functional FW: CS3.90A4 LP9000
adapter 5: C920C6B4 Functional FW: HS1.00A2 LP9802
adapter 6: C920E4B6 Functional FW: RS3.90A6 LP950
```

## 3.12. listIoBase

### 3.12.1. Syntax

#### **listIoBase**

This command displays the PCI IO Base addresses of all HBAs present.

If the system does not have any Emulex HBA installed, error code 45 is returned.

### 3.12.2. Example

```
listIoBase
```

The display looks like the one below:

```
adapter 1: 0000EC00
adapter 2: 0000E400
```

## 3.13. listrev

### 3.13.1. Syntax

#### **listrev n=<adapter number>**

This command displays the revisions of various firmware programs loaded in the flash of the adapter specified by its number.



### 3.13.2. Example

```
listrev n=1
```

The display looks like the one below:

```
Chipset Rev:
BIU:                      1001206D
SM:                        00000000
SM FW:                     07B21950
ENDEC:                     00000000
FW Rev:
Current FW:                SLI-2 Overlay
Kernel Rev:               FFB01314
  Kernel:   LP250048-9001.30a4
Init FW:    LP250048-900Init Load 1.91a0 (ES1.91A0)
SLI-1:      LP250048-900Overlay 1.91a0 (E1M1.91A0)
SLI-2:      LP250048-900Overlay 1.91a0 (E2M1.91A0)
FC-PH Version Supported:
Highest FC-PH Version Supported = 4.3
Lowest FC-PH Version Supported = 4.3
```

## 3.14. listWWN

### 3.14.1. Syntax

```
listWWN
```

A list of all installed adapters in your system is displayed with adapter number (base 1), adapter type, and WWN.

If the system does not have any Emulex HBA installed, error code 45 is returned.

### 3.14.2. Example

```
listWWN
```

The display looks like the one below:

```
adapter 1: Config 10000000 C920A4B3 Non-Volatile 10000000 C9201426 LP8000
adapter 2: Config 10000000 C920DAB8 Non-Volatile 10000000 C920DAB8 LPe11000
adapter 3: Config 10000000 C920B4C2 Non-Volatile 10000000 C9203C5D LP850
adapter 4: Config 10000000 C920A6D1 Non-Volatile 10000000 C9204E5F LP9000
adapter 5: Config 10000000 C920C6B4 Non-Volatile 10000000 C9205B6C LP9802
adapter 6: Config 10000000 C920E4B6 Non-Volatile 10000000 C9208B9A LP950
```



where Config WWN is obtained from Configuration Region 16 or 32 and Non-Volatile WWN is the one you might write, using the writeWWN or scriptWWN command.

## 3.15. logfile

### 3.15.1. Syntax

**logfile l=<filename>**

This command creates a log file specified by the selected file name.

#### Notes:

- This command is valid ONLY IN SCRIPT FILE.
- The default log file is lpcfglog.txt created in the system current directory.

### 3.15.2. Example

```
logfile l=d:\log\hplplog.txt
```

## 3.16. pciloopback

### 3.16.1. Syntax

**pciloopback n=<all/adapter number> r=<repeat count> o=<option on error>**

This command runs the PCI loopback test. With one command, you can run the test on ONE or ALL (if you select n=all) adapters in your system. In the following examples, r is the repeat count, o is the test action option on error with o=1 for STOP, o=2 for REPEAT, o=3 for IGNORE.

### 3.16.2. Example

```
pciloopback n=all r=100 o=1
```

## 3.17. readbootdevice

### 3.17.1. Syntax

**readbootdevice n=<adapter number>**

This command displays the WWN and LUN number of the current selected boot device.

### 3.17.2. Example

```
readbootdevice n=1
```

The display looks like the one below:



Boot Device WWN: 10000000 C920A4D6

Boot Device LUN: 2

## 3.18. reset

### 3.18.1. Syntax

**reset n=<all/adaptor number> s=<skip Post Test option>**

This command resets the adapter(s). It has a s option to skip the post test in Restart (1=yes; 0=no):

### 3.18.2. Example

reset n=all s=0

## 3.19. repeat

### 3.19.1. Syntax

**repeat r=<repeat count>**

This command can be used at the end of a script file when user wants to repeat a series of commands from the beginning of the script file *r* times. In this case, the repeat will stop after *r* times.

*Notes:* You can stop the test while using script file by hitting the S or s key.

### 3.19.2. Example

repeat r=10

(only in script file)

## 3.20. restoreWWN

### 3.20.1. Syntax

**restoreWWN n=<adapter number> c=<wwn filename>**

This command reads the WWN from the specified file and uses it to update the NVPARMS.





### 3.20.2. Example

```
restoreWWN n=4 c=ctwwn1.sav  
restoreWWN n=2 c=d:\dfwwn1.sav
```

## 3.21. saveWWN

### 3.21.1. Syntax

**saveWWN n=<adapter number> c=<wnn filename>**

This command reads the configuration region 16 (or 32) of the adapter specified by its number and saves its contents to the selected wwn file.

### 3.21.2. Example

```
saveWWN n=4 c=ctwwn1.sav  
saveWWN n=2 c=d:\dfwwn1.sav
```

## 3.22. screendisplay

### 3.22.1. Syntax

**screendisplay o=<display option>**

This command enables/disables test message displays on screen, depending on display option:

o=1: allows message displays on screen  
o=0: suppress message displays on screen

Notes: This command is supported ONLY IN SCRIPT FILE.

### 3.22.2. Example

A script file has the following commands:

```
version  
listhba  
screendisplay o=0  
download a=lp8000 i=c:\temp\dd381a3.awc  
listboot n=2
```



```
enableboot n=2 i=1
```

In this example, the version and listhba commands have both result messages output to the log file and to the screen. After the screendisplay o=0 command, all the successive commands (download, listboot, enableboot) only have the result messages output to the log file, but no longer to the screen.

## 3.23. scriptWWN

### 3.23.1. Syntax

```
scriptWWN n=<adapter number> w0=<WWPN word 0> w1=<WWPN word 1>
```

This command reads the WWN words 0 and 1 from the command line to update the NVPARMS. This new WWN will be used by the HBA, not the one in Configuration Region 16 or 32.

### 3.23.2. Example

```
scriptWWN n=1 w0 = 10000000 w1=C920A1B2
```

## 3.24. setbootdevice

### 3.24.1. Syntax

```
setbootdevice n=<adapter number> w0=<WWPN word 0> w1=<WWPN word 1> l=<LUN>
```

This command selects the boot device specified by its WWN and LUN number.

The proper Boot BIOS will be enabled if none is yet enabled.

### 3.24.2. Example

```
setbootdevice n=1 w0=10000000 w1=c920a4b6 l=2
```

## 3.25. version

### 3.25.1. Syntax

```
version
```

### 3.25.2. Example

```
version
```

The display looks like the one below:

```
DOSlpcfg version 1.0A1 released on July 05, 2005
```



## 3.26. vpd

### 3.26.1. Syntax

**vpd n=<adapter number>**

This command displays the VPD contents of the adapter specified by its number.

### 3.26.2. Example

```
vpd n=2
```

The display looks like the one below:

```
Model: LP250048-900
Serial Number: 0003
Port Number:
Model Description:
    EMULEX LIGHTPULSE LP250048-900 2 GIGABIT PCI FC ADAPTER
Program Type:
    T2:0xB2,0xB8,T3:0xB1,0xB2,0xB3,0xB5,0xB6,0xB7,T6:0xB2,T7:0xB2
```

## 3.27. writeWWN

### 3.27.1. Syntax

**writeWWN n=<all/adapter number>**

This command allows user to enter word 1 of the WWN via the keyboard or a barcode scanner to update the HBA NV Parameters with the new value of WWN.

This new WWN will be used by the HBA, not the one in Configuration Region 16 or 32.

This command is not valid in Script file.

### 3.27.2. Example

```
writeWWN n=1
```

The WWN word 0 has the default value of 0x10000000.

DOSLPCFG will ask you to enter the desired value of WWN word 1 via the keyboard or a barcode scanner.



## 4. Script File

Commands can be grouped together in a script file so that a set of commands can be carried out. A sample script file is listed below:

```
version

screendisplay o=0

;download a=lp8000 i=c:\temp\dd381a3.awc

;reset n=1 s=0

;reset n=2 s=0

reset n=all s=0

listboot n=1

enableboot n=1 i=2

;pciloopback n=1 r=10 o=1

;pciloopback n=2 r=10 o=2

pciloopback n=all r=50 o=3

intloopback n=all r=10 o=1

extloopback n=all r=40 o=3

;repeat r=10
```

Comment line starts with a semicolon. Each line follows the same syntax of a valid command as listed in section 3. You can create your own script file to fit your needs then run the combined tests via the @ command.

### Notes:

- You can have the series of all test commands in the Script file to run a specified number of times by adding the command **repeat** at the last line of the Script file.
- You can hit the **s** key any time you want to stop all tests.



## 5. Log File

Results of all commands are recorded in a log file. Unless specified by the **logfile** command, the default log file is `lpcfglog.txt` in the system current directory.

The sample of a log file is listed below:

```
>>>>>>> Test Script starts @ 10:34:28 on 05/31/05 >>>>>>>

listhba

adapter 1:   C92E511A   Functional FW: HS1.90A4   LP9802
adapter 2:   C9396BA6   Functional FW: ES1.91A0   LP250048-900

extloopback n=all r=500 o=1

**Start tests on Adapter 1
Run EXT Loopback
    Pass 500 test(s)
*Complete tests on Adapter 1, NO error

**Start tests on Adapter 2
Run EXT Loopback
    Pass 500 test(s)
*Complete tests on Adapter 2, NO error

intloopback n=all r=500 o=1

**Start tests on Adapter 1
Run INT Loopback
    Pass 500 test(s)
*Complete tests on Adapter 1, NO error
```



\*\*Start tests on Adapter 2

Run INT Loopback

Pass 500 test(s)

\*Complete tests on Adapter 2, NO error

pciloopback n=all r=500 o=1

\*\*Start tests on Adapter 1

Run PCI Loopback test

Pass 500 test(s)

\*Complete tests on Adapter 1, NO error

\*\*Start tests on Adapter 2

Run PCI Loopback test

Pass 500 test(s)

\*Complete tests on Adapter 2, NO error

extloopback n=all r=500 o=1

\*\*Start tests on Adapter 1

EXTLB: Error - Link is not UP

Encounter Error, stop all tests

----- Test Script stops @ 10:34:56 on 05/31/05 -----



## **6. Error Codes**

DOSLPCFG returns DOS-level errors. All current error codes are listed below:

0:	No error
1:	Invalid adapter number
2:	Mailbox Command error
3:	No valid Boot BIOS found
4:	Open File error
5:	Invalid Configuration Region
6:	Invalid adapter name
7:	Download error
8:	Invalid Boot BIOS index
9:	Link NOT up for External Loopback test
10:	Link NOT up for Internal Loopback test
11:	Invalid jumper selection (in JUMPER command)
12:	Invalid alternate configuration region (in JUMPER command)
13:	PCI loopback test fails
14:	Adapter reset error
15:	Read Configuration Region error
16:	No VPD information available
17:	No Command in Command Line
18:	Open Log File error
19:	Read Wakeup Parameters error
20:	Update Wakeup Parameters error
21:	Incorrect Test Parameters
22:	Stopped by User
23:	Internal Loopback Test fails
24:	External Loopback Test fails



- 25: Error exists after 4 retries
- 26: Invalid Command
- 27: Incorrect Syntax
- 28: Command supported only in Script File
- 29: Read\_Rev error
- 30: Dump Configuration Region error
- 31: Read File error
- 32: Short File error
- 33: Read NVPARMS error
- 34: Write NVPARMS error
- 35: Command not supporting All adapters
- 36: Invalid LUN number
- 37: No Boot BIOS enabled
- 38: Update Configuration Region error
- 39: No Boot BIOS found
- 40: Dump Memory error
- 41: Update EROM error
- 42: Delete Load Entry error
- 43: Write WWN error
- 44: Not supported in Script file
- 45: No Emulex HBA found